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20.1 Overview

Unstable slope management provides the ability to rate and prioritize unstable slopes for remediation in consideration of the limitations of funds available to carry out the slope investigation. Actual design requirements for unstable slopes are provided in **WSDOT GDM Chapters 13 and 14**. The methodology used to prioritize the slopes based on risk of failure and impact to the public, and the costs and benefits of performing the needed repairs, are provided in the Unstable Slope Management System (USMS) Guidelines, and the article entitled, “Unstable Slope Management in Washington State” by **Lowell and Morin (2000)**.

In the early 1990s WSDOT implemented a new project programming approach for The Highway Construction Program that involved prioritizing and programming projects based on defined service objectives. One of the service objectives within The Highway Construction Program is preserving the existing highway infrastructure in a cost effective manner in order to protect the public investment in the system. One of the action strategies in this service objective is to stabilize known unstable slopes. The funding level for the unstable slope service objectives has been set at \$30 million dollars per biennium for 10 biennium (20 years). WSDOT has internally developed a comprehensive management system that can:

- Rationally evaluate all known unstable slopes along WSDOT highway facilities utilizing a numerical rating system for both soil and rock instabilities.
- Develop an unstable slope rank strategy, based on highway functional class that would address highway facilities with the greatest needs.
- Provide for early unstable slope project scoping, conceptual designs for mitigation, and project cost estimates that could be used for cost benefit analysis
- Prioritize the design and mitigation of unstable slope projects, statewide, based on the expected benefit, and ranked rating by highway facilities functional class.

The Unstable Slope Management System (USMS) is central to the process for management of unstable slopes. It is a SQL server database that is one of WSDOT’s first truly interactive systems using internet technology and a GIS application. The application and database is designed for all internal WSDOT participants in the unstable slope management process to view and enter data pertaining to their respective job functions.

20.2 References

Lowell, S., and Morin, P., 2000, “Unstable Slope Management Washington State”, *TR News* 207, pp 11-15.

